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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/590,277

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Kenji Hasegawa

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EXAMINER

NGUYEN, COLETTE B

ART UNIT

PAPER NUMBER

1793

MAIL DATE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/590,277	<b>Applicant(s)</b> HASEGAWA ET AL.	
	<b>Examiner</b> COLETTE NGUYEN	<b>Art Unit</b> 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 19 October 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 2-9 and 11-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2-9 and 11-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)         | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

**DETAILED ACTION**

***Status of the application***

***Claims 2-7, 11 are amended. Claim 17 new.***

***Claim 2-9, 11-17 are presented for examination***

***Claim Rejections - 35 USC § 102/103***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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4. **Claim 2-7, 11-14 and 17** are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Prased et al (US2003/0138679).

5. Regarding claim 2. Prased (679) discloses a fuel tank that is detachable, i.e. can be removable from the system of the fuel cell with self-sealing inlet/outlet connector (**connector 114**) which allows to control fuel to flow thru a flow path only when it mates (join) with a corresponding host device **connector 116**. The tank has a fuel injecting portion (Fig 4, spring 120 and pusher 122), a flow path (108) with shut off valve (126). As for configuration and shape, depend on the host device, the fuel tank can be vary. It would have been obvious for one of ordinary skill in the art at the time of the invention to modify the teachings of Prased and adapt it to the host device and replace the connectors of Prased with other equivalent devices with the same concepts, i.e. a removable fuel tank with interlocking devices when it is installed and removed from the fuel cell. . (fig 1-5 and para 0024, 0035).

6. Regarding claims 3, 4, 5, 12 and 13. Prased discloses the control sequences of the connectors 114, 116 and of shut-off valve 126 using back pressure of the reaction chamber 104 and the porous structure 128, which are the equivalent of the claimed valve opening and closing members. (para 32, 35). Prased does not teach the use of a handle; however he discloses in para 0028, suitable locking devices, latches provided to hold the fuel tank in place, and how the system is connected together so fuel can be controlled to prevent leakage when the tank is removed or engaged.

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7. Regarding claim 6. Prased teaches a housing 112, the equivalent of the claimed casing 110 and a mechanical keying apparatus such as a rail and slot arrangements . He does not teach a shutter configured in an opening portion. However, it would have been obvious for one of ordinary skill in the art at the time of the invention to provide a shutter as a positive guide for alignment and indication of positive engagement and connection which is the same concept of a mechanical keying apparatus that Prased teaches.

8. Regarding claim 7. Prased discloses the fuel tank according to claim 2 wherein connectors 114 and 116 (equivalent to the claimed fuel valves) once mated or coupled will allow fuel to flow thru. As the claim is an apparatus, the limitation of the structure is patentable subject and not how it is operating.

9. Regarding claim 11. Prased (679) discloses a fuel cell system wherein the fuel tank can be detachable, i.e. or removable from the system of the fuel cell with self-sealing inlet/outlet connector (connectors 114 and 116) which allow to control fuel to flow thru a flow path (fig 4,7,8 and para 24,35). The tank has a fuel injecting portion (Fig 4, spring 120 and pusher 122), a flow path (108) with shut off valve (126). As for configuration and shape, depend on the host device, the fuel tank can be vary. It would have been obvious for one of ordinary skill in the art at the time of the invention to modify the teachings of Prased and adapt it to the host device. (fig 1-5 and para 19-35) and replace the connectors of Prased with other equivalent devices with the same concepts, i.e. a removable fuel tank with interlocking devices when it is installed and removed from the fuel cell. . (fig 1-5 and para 0024, 0035).

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10. Regarding claim 14. Prased discloses locking devices such as latches in para 0028.

11. Regarding claim 17. Prased discloses the connectors 114 and 116 which are opened with the connection of the fuel tank to the fuel cell and the connectors are closed when the fuel tank disengaged.(para 24 and fig 7 and 8)

***Claim Rejections - 35 USC § 103***

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

14. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

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not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

15. **Claims 8 and 15** are rejected under 35 U.S.C. 103(a) as unpatentable over Prased (US2003/0138679) in view of Yonetsu et al (US2003/0082421). Prased teaches a fuel tank according to claim 2 and a fuel system according to claim 11. He does not teach that a portion of the tank is made of a material which is deformable in accordance with a reduction of the contents. Yonetsu (421) teaches a fuel cell with a pressure adjusting mechanism which maintains constant the pressure wherein the tank is housed in a bellows-shaped storage portion and an air pressure balancing portion (element 9 and pressure release valve 15) (para , 0058, 0063). It would have been obvious for one of ordinary skill in the art at the time of the invention to incorporate the bellow shaped fuel tank (deformable material) of Yonetsu with the teaching of Prased of interlocking with a detachable fuel tank so the pressure can be maintain and a good seal can be achieved.

16. **Claims 9 and 16** are rejected under 35 U.S.C. 103(a) as being unpatentable over Prased as applied to claim 2 and 11 above, in view of Kazunori et al (JP2004-192171). Prased discloses a fuel tank used in a fuel cell wherein shut off valves are used to control the flow of fuel automatically. He does not specify electromagnetic valves. Kazunori (171) specify the use of electromagnetic valves as shut-off valves to control the fuel from the fuel cartridge in a fuel cell.(para 18, fuel valves24). It would have been obvious for one of ordinary skill in the art at the time of the invention to use

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the electromagnetic valves of Kazunori with the teaching of Prased of the fuel tank so the control can be automatic.

### ***Response to Arguments***

17. Applicant's arguments filed 10/19/09 have been fully considered with the followings:

18. The claims objections are withdrawn as the claims have been rewritten.

19. Rejection under 35 USC112 is withdrawn.

20. Other rejections stands for the following reasons: Claims 2-9 and 11-17 pertain to a removable fuel tank with a fuel injection portion and a flow path opening and closing members which are interlocked by opening or closing when the fuel tank is mated or removed to the fuel cell. As the claims are about an apparatus and NOT a method of using, the patentability is based on the structure and devices which can perform the functions and NOT on how these devices are operated. The fuel valves and closing valves in a flow path of claim2 and 11 are the same as connectors 114, 116 of Prased and the control valve 23 of Yonetsu.

21. The allowance of claims 8 and 15 are withdrawn as Yonetsu already discloses the concept of using a deformable material (bellow shape) fuel tank to maintain constant pressure.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to COLETTE NGUYEN whose telephone number is



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(571)270-5831. The examiner can normally be reached on Monday-Thursday, 10:00-4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curt Mayes can be reached on (571)-272-1234. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/COLETTE NGUYEN/  
Examiner, Art Unit 1793

February 26, 2010

/Melvin Curtis Mayes/  
Supervisory Patent Examiner, Art Unit 1793